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Mercury Education & Reduction & Washington State Schools

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Persistent, Bioaccumulative Toxins (PBT) Initiative

- Develop action plans for those contaminants that build-up in our environment
- Mercury was the first PBT chosen
- Action plan completed by Ecology and DOH in January 2003



Goals of the Mercury Chemical Action Plan

- Virtual elimination (continual reductions) of the use and release of anthropogenic (man-made) mercury in Washington State
- Minimize human exposure to mercury through better mercury collection, disposal, and management options



Elements of the Mercury Chemical Action Plan

- Overview of what we know about human-caused sources of mercury in Washington
- List mercury reduction options and recommendations
- Identify research needs
- Reduction actions will be staggered based on
 - Resources
 - Knowledge
 - Availability of non-mercury alternatives



Mercury Chemical Action Plan Conclusions

- Significant amount of mercury released into WA's environment from disposal of common consumer products (i.e. fluorescent light tubes, thermometers, thermostats).
- Many WA residents are not aware of products that contain mercury, and are likely to dispose of certain mercury containing products with their garbage.



Mercury Chemical Action Plan Conclusions

- There is a need to educate WA residents about mercury in products and a need to provide clear disposal/recycling/and mercury management options
- Mercury pollution is a global environmental problem (i.e. many fish consumption advisories, including some here in WA)



Estimated Annual Release from Point and Area Sources of Hg in WA

Source	Est. Annual Release (lbs.)	Receiving medium
Distillate Fuel #2	733	Air
Coal-fired power plants	436	Air
Manufacturing	337	Air, Land, Water
POTWs	331	Land
Oil Refineries	125	Air, land, Water
Medical Waste Autoclaves	106	Air, Land
Crematoria	57	Air
Sewage Sludge Incinerators	32	Air
Residual Fuel	29	Air
Municipal Waste Incinerators	18	Air
Gold Mining	0-777	Air, Land, Water
TOTAL	2,180 – 2,957	

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Air, Land, Water
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Estimated Hg in Products Disposed of in WA Annually

Mercury Products	Estimated lbs. disposed annually
Fluorescent Lamps	437 - 505
Thermostats	412
Amalgam from Dental Offices	>404
Auto Light Switches	253
Button Cell Batteries	88
Dental Amalgam in Feces & Urine	61
Household Fever Thermometers	11 - 300
Total	1,666 – 2,023

Elemental Hg. from schools: 1-200 lbs

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Mercury Chemical Action Plan

Implementation Prior to July 2003



- Expand existing fluorescent light recycling efforts
 - Governor's Directive to state agencies to recycle lamps
 - Seattle Mariners, Puget Sound Energy, Unico Properties voluntary lamp recycling efforts
- Household mercury fever thermometer collection/recycling programs
 - > 50,000 collected by local government collection efforts in February 2003
- Memorandum with state dental association to phase in the installation and use of amalgam separators in state dental offices by 2005



House Bill 1002 – Mercury Education & Reduction Act

- Requires “Contains Hg” label on fluorescent lamps effective Jan ’04
- Bans sale of Hg containing novelty products, thermometers, manometers, thermostats, vehicle light switch Jan ’06
- Bans use of bulk elemental Hg and Hg compounds in K-12 schools by Jan ’06



House Bill 1002 – Mercury Education & Reduction Act (MERA)

- DOH to develop education plan for schools, local governments, businesses & public on proper disposal methods for Hg-added products
- Ecology to join “multistate informational clearinghouse”
- Ecology to petition EPA requesting development of a national mercury repository site



Current Activities – WA DOH

- Developing the education plan
- Notified businesses about fluorescent bulb labeling
- Contacting KC about their methods
- Developed fact sheets on MERA for businesses and the schools
- Placed Fact Sheet onto the web for public access
- Received an EPA grant to work on thermostat recycling in 6 counties
- Met with business, school, and non-profit leaders to explore collaborative efforts and to educate them.



MERA and the Schools

- Bans use of bulk elemental Hg and Hg compounds in K-12 schools by Jan '06
- Discard all elemental mercury from primary and secondary schools by 1-1-06
- Recycling of all thermometers, fluorescent bulbs, high intensity bulbs and thermostats
- Ban the purchase of cars with convenience switches by 6/1/06



•Possible Locations of Hg in Schools

Science Labs

HVAC Systems

Nurses Office

Main Office

Home Ex/Family Life Classrooms

Maintenance & Facilities Areas

Vocational Tech Classrooms



Mercury and Learning: Why This Is Important

- ~ 12 million children (17%) in the US under 18 suffer from one or more learning, developmental or behavioral disability
- Attention deficit hyperactivity disorder (ADHD) affects 3-6% of all school children (with some estimates up to 17%)
- Learning disabilities affect 5-10% of school children



Mercury and Learning: Why This Is Important

- ~ 1 % of students are mentally retarded
- Autism may be as high as 2 per 1,000 students, with a doubling in number occurring in CA

Link: Mercury is a neuro-developmental toxin which can result in a wide array of preventable problems.



Proper Disposal

- Mercury is hazardous waste
- Most city/county hazardous waste sites collect mercury for recycling for a small fee
- Most sites allow school districts to bring waste as an Small Quantity Generator
- You can take elemental mercury, fluorescent lights, thermometers, manometers, to these sites



Mercury in Schools: Spill Clean Up

When liquid mercury spills, it forms droplets that can accumulate in tiny places, and then emit vapors into the air. Mercury vapor is odorless, colorless and very toxic. Most mercury exposures occur by breathing vapors,, by direct skin contact or eating foot or drinking water contaminated with mercury. Treat each exposure seriously.

Health problems can result, depending on:

- how much has entered the body,**
- how long the exposure lasts,**
- how the body responds., and**
- If it involves a pregnant woman**



Mercury in Schools: Spill Clean Up

There are 3 different procedures to address mercury spills:

- 1. Spills less < or = to amount in a thermometer**
- 2. Spills greater than the amount in a thermometer but less than one pound (2 Tablespoons)**
- 3. Spills greater than one pound (2 Tablespoons)**



Mercury Spill Clean Up

Spills Less than that in a Thermometer

- Remove everyone from the spill area.
- Shut the door of impacted area.
- Turn off ventilation system
- PREVENT children and animals from entering
- Mercury can be easily cleaned up from wood, linoleum, tile or like surfaces.
- Curtains, carpet or upholstery should be removed



Mercury Spill Clean Up

Items Needed to Clean UP a Spill

- **4-5 zip lock-type bags**
- **Trash bags (2-6 mm thick)**
- **Rubber or latex gloves**
- **Paper towels**
- **Cardboard or squeegee**
- **Eyedropper**
- **Duct tape or shaving cream & small paint brush**
- **Flashlight**
- **Powdered Sulfur**

For more information go to www.EPA.gov/epaoswer/hazwaste/mercury/spills.htm
Source EPA Website



Mercury Spill Clean Up

If the spill is more than the amount in a thermometer, but less than 2 Tablespoons (1 pound):

- **Isolate the area**
- **Turn down the temperature**
- **Open windows**
- **Prevent anyone from walking through the mercury**
- **Do not vacuum**
- **Contact your local or state health or state environmental agency**



Cleaning Up Larger Mercury Spills

If I the spill if more than one pound (2 Tablespoons)

- **For a spill of > 1 pound (2 Tablespoons)**
 - Call the National Response Center (NRC)
 - 1-800-424-8802



Current Activities – DOH & Ecology

- Implementing Mercury Education and Reduction Act
 - Fluorescent lamp labeling requirement effective 01/01/04
 - Joined Interstate Mercury Education and reduction Clearinghouse (IMERC)
 - Petition letter to EPA regarding need for national mercury repository facility
 - Voluntary MOU with state dental association to implement BMPs and install amalgam separators by Summer 2005



Additional Information

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www.doh.wa.gov/ehp/oehas/EHA_fish_adv.htm

Or

Ecology
Ecology's PBT/Mercury Web Page:
www.mercurymess.org

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